

UNCLASSIFIED

NAVAL WAR COLLEGE  
Newport, RI

OPERATIONAL PLANNING CONSIDERATIONS FOR THE DEPLOYMENT OF  
NONLETHAL WEAPONS: A COMMANDER'S GUIDE

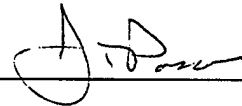
by

Jonathan T. Pasco  
LtCol, USMC

A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

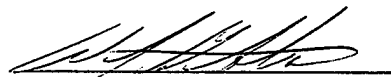
The contents of this paper reflect my own personal view and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature



17 May 1999

**DISTRIBUTION STATEMENT A**  
Approved for Public Release  
Distribution Unlimited

  
Col William J. Gibbons  
Faculty Advisor

UNCLASSIFIED

DTIC QUALITY INSPECTED 4

19991122 165

## REPORT DOCUMENTATION PAGE

1. Report Security Classification: UNCLASSIFIED			
2. Security Classification Authority:			
3. Declassification/Downgrading Schedule:			
4. Distribution/Availability of Report: DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.			
5. Name of Performing Organization: JOINT MILITARY OPERATIONS DEPARTMENT			
6. Office Symbol: NWC Code 1C		7. Address: NAVAL WAR COLLEGE 686 CUSHING ROAD NEWPORT, RI 02841-1207	
8. Title (Unclassified): Operational Planning Considerations for the Deployment of Nonlethal Weapons: A Commander's Guide			
9. Personal Authors: LtCol Jonathan T. Pasco, USMC			
10. Type of Report: FINAL		11. Date of Report: 17 May 1999	
12. Page Count: 24			
13. Supplementary Notation: A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the JMO Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.			
14. Ten key words that relate to your paper: Nonlethal Weapons; Operational Planning; MOOTW; ROE; Lethality; Risk; Military Operations; Technology; JTF; RMA			
15. Abstract: Nonlethal weapons (NLW) will have great utility for the JTF-level commander by providing the capability to preempt conflict, separate belligerents, isolate non-combatants from combatants, shape the battlefield, minimize collateral damage, deny an enemy the use of supplies, materiel and terrain, neutralize WMD without spreading contamination, and by enhancing the effects of lethal weapons. But with this enhanced capability comes a more complex decision making obligation for the operational commander. He/she must analyze the appropriateness of NLW use and be confident that their use will reduce tension, not escalate it. The legal, social, political and environmental ramifications of their use must be well-understood and measured against the inherent uncertainties of conflict and the impact that unintended consequences may have on the greater military or political objectives of the operation.			
16. Distribution / Availability of Abstract:	Unclassified X	Same As Rpt	DTIC Users
17. Abstract Security Classification: UNCLASSIFIED			
18. Name of Responsible Individual: CHAIRMAN, JOINT MILITARY OPERATIONS DEPARTMENT			
19. Telephone: 841-6461		20. Office Symbol: C	

## Abstract of

### OPERATIONAL PLANNING CONSIDERATIONS FOR THE DEPLOYMENT OF NONLETHAL WEAPONS: A COMMANDER'S GUIDE

Nonlethal weapons (NLW) will enhance a commander's ability to conduct military operations across the spectrum from conventional armed conflict to military operations other than war. They will do so by enabling the application of force in circumstances that lie in the area between the appropriate use of "no force" and the level of threat justifying the use of lethal force. In this regard, NLW will allow the commander to retain the initiative and thereby lower the risk to his own forces. NLW will have great utility for the commander by providing the capability to preempt conflict, separate belligerents, isolate non-combatants from combatants, shape the battlefield, minimize collateral damage, deny an enemy the use of supplies, materiel and terrain, neutralize WMD without spreading contamination, and by enhancing the effects of lethal weapons. But with this enhanced capability comes a more complex decision making obligation for the operational commander. He/she must analyze the appropriateness of NLW use and be confident that their use will reduce tension, not escalate it. The legal, social, political and environmental ramifications of their use must be well-understood and measured against the inherent uncertainties of conflict and the impact that unintended consequences may have on the greater military or political objectives of the operation. The commander must ensure that operational plans reflect the augmentation of lethal weapons with NLW, not their replacement, and that there should be no specified or implied first-use of NLW before lethal force can be employed. The operating environment of the 21<sup>st</sup> Century will be a complex mixture of rarely occurring conventional armed conflict, increased MOOTW, public sensitivity to the use of military power, and an explosion of new nonlethal technology. Now is the time to prepare commanders for tomorrow's challenges by providing them with the guidance and education that will empower them to make the best net assessment of a crisis, and arrive at military courses of action that may, if appropriate, incorporate the deployment of NLW as an enabling military element of national power.

## TABLE OF CONTENTS

Introduction .....	1
Doctrine—Where Are We? .....	4
A Commander's Concerns .....	6
Strategic Concerns .....	7
Operational Concerns .....	9
Choosing Nonlethal Weapons .....	12
Synergy .....	12
Side Effects .....	13
Risk and Liabilities .....	14
Countermeasures .....	15
Legal Concerns .....	15
Conclusion .....	17
Recommendations .....	18
Appendix A; Non-Lethal Weapons .....	19
Bibliography .....	20

## **Introduction**

Today's soldiers, sailors, airmen, Marines and coast guardsmen are America's most sophisticated and valuable warfighting assets. They are well-trained and well-equipped to meet the foreseeable conventional military threats of the near-future; however the most likely threats our military forces will encounter in the 21<sup>st</sup> Century are not likely to be of the conventional variety.

The President's national security strategy published in October 1998 states that "[s]maller-scale contingency operations . . . including humanitarian assistance, peace operations, enforcing embargoes and no-fly zones, evacuating U.S. citizens, reinforcing key allies, and limited strikes and intervention . . . will likely pose the most frequent challenge for U.S. forces . . . ."<sup>1</sup> Since Desert Storm, American forces have been involved in a wide range of peacekeeping and humanitarian operations and are regularly confronting regional security problems around the world. America's national security strategy focuses on engagement and taking a leadership roll in preserving international peace and stability. Indeed, in the 42 years between 1945-1987, the United Nations conducted 13 peacekeeping missions; but in the 6 years between 1988-1994, it conducted 22 peacekeeping missions.<sup>2</sup> The military, as an instrument of national power, is increasingly called upon to accomplish national security objectives that do not call for conventional warfighting skills alone. New military courses of action and methods of employing force are emerging as nonlethal weapons enter the military kit bag. The armed forces are being required to fundamentally rethink the manner in which they accomplish military and political objectives as the traditional use of lethal force

---

<sup>1</sup> The White House, A National Security Strategy for a New Century, (Washington: October 1998), 21.

<sup>2</sup> Malcolm Dando, A New Form of Warfare; The Rise of Non-Lethal Weapons (London: Brassey's, 1996), 2.

becomes increasingly inappropriate for the assigned mission, except as a means of self-defense. America's military forces deployed in the future are more likely to be engaged in these 'military operations other than war' (MOOTW), than in conventional battle, yet they are still principally equipped with only lethal weapons.

The nation's senior leadership and policymakers have begun to realize that our military forces are at increased risk when the only force options available to them are the two extremes of "no force" and "lethal force." As a result, a significant area of attention within the current military technology revolution is exploring and developing a new class of weapons which are being classified and labeled as "nonlethal weapons" (NLW). These new weapons will enable commanders to provide a rheostatic application of force covering the spectrum between no force and lethal force. Commanders will be able to tailor their operational procedures to ensure that when force must be used, it will be proportionate to that necessitated by the situation and the specific mission. The most fundamental value of NLW will be the reduction of risk to American forces, their opponents and the non-combatants in the proximity of the target enabled by the new nonlethal ability to apply measured levels of force with the intent of defusing hostilities before they reach lethality. Units possessing NLW can retain the initiative by employing force at lower thresholds of danger and reduce their own vulnerability.<sup>3</sup> Nonlethal weapons will improve the operational capability of U.S. forces to respond to the full spectrum of 21<sup>st</sup> Century challenges, particularly those non-conventional military missions of the type articulated in the national military strategy where increased interaction between friendly troops and non-combatants is increasingly becoming a feature of the operational landscape.

---

<sup>3</sup> Joint Non-Lethal Weapons Directorate, "A Joint Concept for Non-Lethal Weapons", January 1998, p. 2. <http://www.usmc.mil/nlw> Use FTP link, (12 April 1999).

At the present time, the fielding of NLW is limited to low-technology weaponry such as rubber bullets, bean bags, batons, riot control agents (i.e. CS gas) and “cattle prods.” The vision of 21<sup>st</sup> Century military action foreshadows a required operational capability for high-technology NLW with stand off capability and anti-material as well as anti-personnel applications using acoustics, lasers, electromagnetic pulse and high energy microwaves, among a field of numerous promising technologies. Military applications in this wide-open field are progressing from concept stage to reality as part of the rapid advancement in technology occurring in the present revolution in military affairs (RMA), or perhaps more specifically, the military technology revolution (MTR).

Joint doctrine has not been published for the employment of NLW and Joint Pub 3-07, *Joint Doctrine for Military Operations Other than War*, does not even mention the subject of NLW. According to the Joint Chiefs of Staff, “[t]oday’s joint doctrine focuses on existing capability, while emerging concepts address the future. Emerging concepts need to be captured within an overarching framework of concepts without compromising joint doctrine’s focus on current capabilities.”<sup>4</sup> The Joint Chiefs are correct in that the merging of valid new concepts into joint doctrine must coincide with organizational and material changes and occur early enough to support required joint training and education. While it is probably premature to suggest that we need formal doctrine for NLW employment before the developing technologies mature and enter the inventory, this is the opportune time to discuss operational employment considerations and begin to fill the information void on this subject.

The purpose of this paper is not to discuss the technology or the specific weaponry, per se, but to address the usefulness of NLW and the concerns of the future operational

---

<sup>4</sup> Joint Chiefs of Staff, Concept for Future Joint Operations; Expanding Joint Vision 2010, (Washington: May 1997), 75.

commander who will likely be armed with nonlethal weaponry and find him/herself in the position of having to decide whether the employment of NLW is appropriate for the mission at-hand. This paper concludes that nonlethal weapons will offer commanders a wide range of force options filling the current void that exists between verbal warnings (essentially no force) and lethal force. These new options pose new challenges for operational commanders who will have to decide, as never before, what is the appropriate weapon and appropriate level of force for a given situation. The goal of this paper is to identify many of the considerations necessary for well-thought-out decisions of this nature and to answer the question: What does a Joint Task Force-level commander need to know when deciding whether or not to deploy NLW?

### **Doctrine—Where are We?**

The Joint doctrine published for the U.S. armed forces provides the fundamental guidance for how these forces intend to fight. Presently there is no formal published Joint doctrine that addresses the employment of NLW because Joint doctrine addresses the present capabilities of the armed forces rather than future concepts. Although the military services have been studying them for many years under separate programs, the NLW addressed in this paper are primarily future concepts. In 1996, the Office of the Assistant Secretary of Defense for Special Operations Low Intensity Conflict (SO/LIC) established Department of Defense (DoD) policy for nonlethal weapons<sup>5</sup>, outlined joint service organizational responsibilities, and provided guidelines for the development and employment of NLW. The Joint Non-Lethal Weapons Program began one year later as part of this DoD initiative and

---

<sup>5</sup> Department of Defense, ASD(SO/LIC), Policy for Non-Lethal Weapons (DODD 3000.3) (Washington: Jul 9, 1996).



the Commandant of the Marine Corps was designated the Executive Agent. In 1998 the Joint Non-Lethal Weapons Program Directorate produced a joint concept paper<sup>6</sup> for the DoD addressing the considerations that apply to the development of NLW requirements, capabilities and procedures. In October 1998, the military services jointly produced: MultiService Tactics, Techniques and Procedures for the Tactical Employment of NLW, (FM 90-40; MCRP 3-15.8; NWP 3-07.31; USCG PUB 3-07.31), published by the Air, Land, Sea Application Center at Langley AFB, Virginia. It is arguably the most useful military publication available today for the commander who anticipates the use of NLW in present-day situations.

The guidance and operating principles applicable to today's low-tech NLW will not adequately address the multitude of concerns that will emerge with the employment of the conceptual high-tech NLW that are only a few years away from reality. The ability of the military to apply nonlethal force across the spectrum of conflict will greatly expand the utility of the armed forces as an instrument of national power. The commander who decides to employ these weapons will require extensive education in appropriate weapons selection, desired effect on target, measured application, countermeasures, side effects, after effects, political and cultural sensitivities, law of war, synergy and compatibility with other elements, reversibility, clean-up and neutralization responsibilities and environmental impacts. Figure (1) in Appendix A provides a list of NLW that could be available to commanders early in the 21st Century; some of which already are. The challenge to commanders becomes apparent after reviewing this list of expansive technologies. In order to be effectively employed to achieve the intended results of imposing one's will upon the enemy, while minimizing

---

<sup>6</sup> Available on the JNLWP Web page <<http://www.usmc.mil/nlw>> under the FTP menu.

casualties and collateral property damage, commanders, their staffs and troops, alike, must train with NLW to the same degree as has always been conducted with lethal weapons. The armed forces must have the same confidence in the effectiveness of NLW as it has in the effectiveness of lethal weaponry and must understand that NLW are not intended to replace lethal weapons, rather they augment these capabilities with a wider range of force options. Confidence in nonlethal weaponry can only be achieved if troops retain, at all times, the ability to defend themselves with deadly force in instances where they are threatened with death or serious bodily harm.

### **A Commander's Concerns**

The 21<sup>st</sup> Century operational commander contemplating the use of NLW must include in his commander's estimate of the situation and throughout the staff planning process a whole new array of concerns. Not only must the appropriate weapons be selected, but also the context in which they will be used and the implications of their use must be thoroughly analyzed. The use of NLW at any level of war may have strategic implications. At the operational level a commander may feel political pressure to use NLW as a step before deadly force simply because they are available. "Possessing a non-lethal capability may create the perception, especially among more liberal political figures, that U.S. forces have an obligation to use non-lethal force in every situation, even when it may be operationally unwise or impractical."<sup>7</sup> Higher authority may unduly influence course of action development by implying nonlethal tasks (if not actually specified) and this may increase the risk to the commander's personnel and material assets. The planning required for the

---

<sup>7</sup> Timothy J. Hannigan, and others, Mission Applications of Non-Lethal Weapons, Report for OASD (SO/LIC) (McLean, VA: August 1996), 29.

operational use of NLW will challenge the commander as never before as he analyzes the political, ethical and legal implications of NLW use; selects appropriate weapons based on desired effect, likely countermeasures, and environmental influences; ensures synergy with other weapons, tactics and techniques; and measures risk, consequences and reliability.

**Strategic Concerns.** “What good is a military capability if you don’t use it?” NLW will enhance the political utility of the military instrument of power and for some policymakers, this may be the driving force behind the rising interest in new technology and its applicability as NLW. Maintaining the U.S. armed forces is an expensive proposition and there are plenty of Americans who would rather see the money spent elsewhere. Expanding military missions in the category of humanitarian assistance provides politicians with a palatable means of maintaining a strong military in the post-Cold War global security environment. NLW will enhance the military’s operational utility in MOOTW scenarios by reducing unnecessary violence, damage and bloodshed, any of which could undermine the larger strategic political objective of the mission. NLW, with their more humane and less destructive intent, offer the promise of strengthening international coalitions, especially when the opposing sides contain groups of the same ethnic or religious background. Take, for instance, an allied coalition with Arab member states that is aligned against an Arab “brethren” nation. The Arab coalition forces would be much more amenable to using force against the opposition if the military objectives could be accomplished with NLW. The armed forces can expect to be busy in the 21<sup>st</sup> Century because continued investment in the military, without substantial further reductions in force, is likely to depend on the utility of the force and its frequency of being called to support national security objectives around the world.

The wide variety of conflict situations envisioned in the national security strategy will require "prior clear thinking about the political and military objectives of any peacekeeping intervention, and a deliberate matching of the intervention forces to the operational requirements. If this is not done disaster is the likely outcome."<sup>8</sup> NLW can help an intervention force deter an escalation of hostilities and act as a force multiplier. Peacekeepers can find themselves in direct conflict with an ethnic insurgent group which views the peacekeeping force as unwelcome intruders or aggressors rather than a helpful presence. The commander who properly equips his force with a nonlethal means to quell hostile gestures from this type of group may not have to resort to the use of deadly force and is more likely to accomplish the political objectives.

A current vulnerability of peacekeeping forces is the known reluctance to use lethal force. Opposition forces attempt to exploit this weakness by countering the peacekeeping force with actions just short of drawing a lethal response. It should never be a stated policy that U.S. forces will only use nonlethal force, or that lethal force will only be used for self-defense; doing so emboldens the adversary.

NLW can offer a commander a preemptive means to strike psychologically at a strategic center of gravity (which might be the will of the people or the ruling leadership) by demonstrating a spectrum of force application and the willingness to use it that presents no hope of resistance for the opposition. A commander must further recognize the impact the media and the "CNN effect" can have on accomplishing military and political objectives. Educating the media about the purpose of NLW, their effectiveness, and especially their limitations and potential risks, will help prevent an expectation of bloodless conflict and the

---

<sup>8</sup> Dando, p. 7.

portrayal of mission failure by the media (and a subsequent loss of public support for the operation) when circumstances warranted the use of deadly force. If the media understands that NLW are intended to be less than lethal, but may in fact inflict substantial damage or death due to the uncertainties inherent in any conflict, they may be less likely to attempt to exploit nonlethal "lethality" just to make good copy.

**Operational Concerns.** NLW enhance a commander's options across the entire spectrum of conflict. They can be used for interdiction, isolation, strategic preemption, precision engagement, security assistance, force protection and operational persuasion; and as a force multiplier, they can enhance the lethal effects of other weapons. The rheostatic ability to fine-tune<sup>9</sup> the effects of NLW, from temporary pain or disablement and quickly repaired or reversible, to severe pain, injury, difficult to repair, irreversible or even lethal, provides the commander with selective engagement options. These allow for the use of the lowest level of force necessary to achieve the military objectives while reducing costs and risks to friendly forces and non-combatants. Increased participation in MOOTW by the armed forces will require that "[s]enior leaders face a new level of public sensitivity and scrutiny concerning the proper role of the military as an instrument of national power. Field commanders must understand these sensitivities and attempt to achieve measured military force."<sup>10</sup> Bringing the right combination of effects to bear at the right time to achieve a focused objective will increasingly become a concern of the commander.

NLW will allow commanders to accomplish numerous tasks without the threat or use

---

<sup>9</sup> Douglas C. Lovelace and Steven Metz, Nonlethality and American Land Power: Strategic Context and Operational Concepts, (Strategic Studies Institute, U.S. Army War College, Carlisle, PA: June 15, 1998), 11.

<sup>10</sup> Air Land Sea Application Center, NLW: Multiservice Procedures for the Tactical Employment of Nonlethal Weapons, (Langley AFB, VA, October 1998), p. I-1.

of lethal force as the tool of persuasion, although lethal force must always be available as a backup. They allow for a wider range of the use of force, proportionate to that necessitated by the situation and mission. Douglas Lovelace and Steven Metz, professors at the U.S. Army's Strategic Studies Institute, have identified the following uses for nonlethal technology: to deter or preempt conflict by separating belligerents allowing them to "cool off;" to convince parties to negotiate without the risk of escalation, angering the populace or losing international support; to shape the security environment by providing advice and technology to friendly states; to modify the attitudes, beliefs and perceptions of an opponent; to neutralize combatants intermingled with non-combatants; and to conduct spoiling or disabling attacks against terrorists, weapons of mass destruction (WMD) or drug traffickers.<sup>11</sup> Their list is by no means all-inclusive, and with the majority of NLW currently in the conceptual phase of development, as current technologies mature and new ones emerge, the applicability of nonlethal technology to military purposes will greatly expand.

NLW use will find applicability in most operational scenarios. They can be used in mobility operations by neutralizing enemy obstacles such as landmines, as well as in countermobility operations as a replacement for anti-personnel landmines and as a means of shaping the battlefield through area denial, force protection and precision engagement. NLW can be used to separate the enemy from its supplies by either destroying them or denying access to them, and can attack WMD without the threat of spreading deadly contamination like conventional munitions can. In the 21<sup>st</sup> Century, NLW will have a "vital function in . . . command-and-control warfare which would include psychological operations, electronic warfare, military deception, operational security, information warfare, and the physical

---

<sup>11</sup> Lovelace and Metz, pp. v, vi, 16, 27.

destruction of command-and-control capabilities . . . .”<sup>12</sup> NLW will provide the commander the ability to bridge the gap between peacetime, where the use of force is inappropriate, and wartime where force is acceptable. The nonlethal force option will be appropriate across the spectrum.

The satisfactory employment of NLW will require careful planning and a thorough net assessment by the commander and his staff; a clear understanding of the political value of the mission must be understood. Accomplishing the military objective with conventional means may have a negative impact on the political objective, but alternatively there should be no pressure to use NLW as a prerequisite to lethal force. The NLW resources may be scarce and better saved for a future mission and the availability of nonlethal means should never be the driving factor that influences the decision to use them. Simply stated, just because you have NLW doesn't mean you have to use them. Among the many issues the commander must address are the constraints and restraints associated with: legal, cultural, moral, treaty and coalition obligations; desired effect on target, lethality, side effects and risks; vulnerabilities and countermeasures; training and readiness of his forces to employ the desired weapon; post-employment impact on his own forces; and an assessment of the enemy's likely response to being targeted by the NLW. The MOOTW area of operations (AO) may also be shared by numerous non-governmental organizations (NGO) which may be friendly, neutral, or even in opposition to the military mission. The commander must evaluate how these organizations might interfere with his ability to maneuver and effectively apply NLW. Even the inadvertent hit of NGO personnel by NLW would likely gain

---

<sup>12</sup> Nick Lewer and Steven Schofield, Non-Lethal Weapons: A Fatal Attraction? (London: Zed Books, 1997), 50.

substantial media coverage and could pose a serious threat to military and political objectives.

**Choosing Nonlethal Weapons.** NLW should only be used in situations where they are likely to reduce tension, not escalate it. The commander must thoroughly understand his opponent and be particularly attuned to the targeted culture so as not to evoke an unforeseen, hostile and exaggerated response. The commander's intelligence staff must insure that the intelligence preparation of the battlefield (IPB) process contains a thorough analysis of the adversary's political aims, ideology, motivations, dedication, and leadership, as well as his resources, capabilities and methods of operation. The most appropriate weapon will be selected when decisions are based on the following criteria: nature of the effect on target, manner in which it disables the target, duration of the effect, range, area of impact, potential for lethality, likelihood of collateral damage or injury, climate or environmental influence on reliability, portability, logistics tail, confidence in the weapons system, and cultural impact. The inappropriate use of NLW could prove to be a costly mistake, with both operational and strategic implications.

**Synergy.** NLW must always be backed-up by lethal weaponry in order to afford troops their right to self-defense and to provide a full range of force options to the engaged unit. Units operating in MOOTW and conventional forces engaged in combat in urban terrain may have to switch back and forth between lethal and nonlethal means, making quick decisions in highly stressful situations. They should not be encumbered with bulky or difficult to operate equipment nor weapons systems that take more than a few seconds to switch between the lethal and nonlethal mode; NLW should compliment lethal systems and enhance their effect. Commanders should be thoroughly familiar with the effort involved in



using NLW and never subject their forces to increased risk by requiring the utilization of a weapons system that is not well-suited for use in a particular environment such as rugged terrain, deep vegetation, indoors, or in the middle of a large crowd.

One of the most important benefits to be derived from the use of NLW will be the way they can enhance the effectiveness of conventional lethal munitions. Combining non-lethal with lethal force can facilitate mission accomplishment for two reasons: first, non-lethal capabilities can mitigate many of the adverse effects of lethal force such as collateral damage, noncombatant casualties, and the perception of heavy-handiness; second, nonlethal capabilities can enhance the effectiveness of lethal weapons by disabling or fixing targets, thereby making them more vulnerable to conventional attack, and by inhibiting enemy sustainment efforts and eroding the enemy's will to fight.<sup>13</sup> Commanders should be particularly alert for opportunities to use NLW as force multipliers and economy-of-force measures by combining their effects with those of lethal weapons.

**Side effects.** The commander who chooses to employ NLW must be prepared for the consequences of their use. Principally, the commander must decide, should the nonlethal attack fail in its intended purpose, whether to follow up with a second nonlethal attack, perhaps of a different variety, or use lethal force. Any nonlethal attack may evoke a lethal response and if the opponent does not possess similar capabilities, his only recourse will be to respond with lethal weapons even though the intent of the initial attack was to preclude the escalation of hostilities. For cultural reasons, NLW may prove so offensive to certain groups that their use would be counterproductive to the greater political objectives. Social acceptance of high technology NLW has not been tested and the public could be repulsed by

---

<sup>13</sup> Lovelace and Metz, 24-25.

the image of women or children convulsing in the street following a nonlethal strike using certain chemical or electromagnetic NLW. The use of NLW may be perceived by an enemy as a sign of weakness or lack of resolve and encourage him to take additional risks. Finally, the use of NLW against groups of people will have different effects on different people. Differences in health, age, stamina and the will to resist, will result in a wide range of effects with different durations based on the make-up of each individual, and although intended to cause little lasting harm, can prove deadly.

**Risk and Liabilities.** The risks involved in the use of NLW range from the strategic to the tactical level. At the strategic level, for instance, "nonlethality might make all interventions appear low cost and thus cloud the judgement of policymakers,"<sup>14</sup> and this could have a serious impact on the operational tempo and readiness of the armed forces if they are committed to increasingly more frequent missions. At the operational and tactical levels of war, the uncertain effectiveness of NLW, their temporary effect and the prospect that the target may return to fight another day, all increase the uncertainty and risk already inherent in military operations. There is a risk of losing the advantage of surprise if an initial nonlethal attack fails to achieve the desired results. Commanders must avoid a pattern of first use of NLW and then following with lethal force. The enemy will easily make the connection and unless the nonlethal attack is used to fix the target so as to more effectively bring lethal force to bear, the enemy will have time to relocate or institute countermeasures once initially targeted with the NLW.

The use of NLW carries the risk, as with lethal weapons, that repeated applications may be necessary to achieve the desired effect. Personnel may develop a tolerance to

---

<sup>14</sup> Ibid., 12.

particular nonlethal effects or learn from experience how to minimize their effects. The willingness of a determined adversary to absorb nonlethal effects may even cause strategic problems if the political ends are not worth the escalation to higher levels of force.

Anti-materiel and area denial weapons will carry the liability of post-use cleanup. Foams and super-lubricants, for instance, will deny both friend and foe the use of the target area. A commander may incur a significant logistics burden associated with the cleanup following the use of selected NLW, analogous to the requirements involved in cleaning up an oil spill.

**Countermeasures.** As with any new weapons technology, the edge it provides the holder of the new weapons does not last indefinitely. Countermeasures are soon developed and eventually the opposition acquires the technology itself. NLW are especially rendered less effective or even ineffective by innovative countermeasures. Welder's goggles, hearing protection, and heavy, bulky clothing can deter certain laser and pulsating light weapons, certain acoustic weapons, and kinetic energy projectiles or tazer weapons, respectively.

Force protection concerns must be assessed before units deploy with NLW. Are the troops trained in immediate action drills to respond if the enemy should capture a NLW system and turn it against them? If not, this presents yet another risk the commander must be willing to take. Perhaps medics or corpsmen should always accompany a unit that expects to employ NLW. A quick medical response may be necessary to save the life of a non-combatant hit by a NLW.

**Legal Concerns.** The Secretary of Defense and the service secretaries have the responsibility to ensure that the acquisition and procurement of weapons are consistent with customary international law and arms control agreements. New weapons must clear a legal

review before they ever go into production. This means that NLW procured by the federal government for the military will be legal for military operational use; however, it does not mean that they cannot be misused. Commanders have the obligation to ensure that their forces are properly trained with NLW, employ them in accordance with the laws of armed conflict, and have the appropriate rules of engagement (ROE) to guide their use. The staff judge advocate can provide the commander with valuable guidance concerning the use of force and interpretations rendered by the Geneva Convention, the Certain Conventional Weapon Convention, and the Chemical Weapons Convention (CWC), among others. An informed commander is less likely to authorize the misuse of NLW by unknowingly violating treaties or international law. For instance, the indiscriminate use of NLW on large areas or crowds of people would probably violate the Geneva Convention, and the use of barrier foam against combatants in armed conflict is prohibited by the Clinton Administration's interpretation of the Chemical Warfare Convention.<sup>15</sup> The CWC prohibits the use of riot control agents in armed conflict, and rigid foam is classified as a riot control agent because it contains CS gas.

The ROE for the use of NLW should be less restrictive than the rules allowing for the use of deadly force. To be useful as a graduated and proportional response, forces must be able to use NLW in circumstances where the threat is lower than what would warrant the use of deadly force, or the forces would resort to deadly force immediately and NLW would be of no value. The decision to deploy NLW will, in most cases, rest with the operational commander, although the national command authority must authorize NLW for strategic

---

<sup>15</sup> Margaret-Anne Coppemoll, "The Nonlethal Weapons Debate," Naval War College Review, Spring 1999, 121.

preemption missions. The decision to actually use NLW (i.e. pull the trigger) should be a tactical decision made at the lowest possible level.

### **Conclusion**

Nonlethal weapons will enhance a commander's ability to conduct military operations across the spectrum from conventional armed conflict to military operations other than war. They will do so by enabling the application of force in circumstances that lie in the area between the appropriate use of "no force" and the level of threat justifying the use of lethal force. In this regard, NLW will allow the commander to retain the initiative and thereby lower the risk to his own forces. NLW will have great utility for the commander by providing the capability to preempt conflict, separate belligerents, isolate non-combatants from combatants, shape the battlefield, minimize collateral damage, deny an enemy the use of supplies, materiel and terrain, neutralize WMD without spreading contamination, and by enhancing the effects of lethal weapons. But with this enhanced capability comes a more complex decision making obligation for the operational commander. He/she must analyze the appropriateness of NLW use and be confident that their use will reduce tension, not escalate it. The legal, social, political and environmental ramifications of their use must be well-understood and measured against the inherent uncertainties of conflict and the impact that unintended consequences may have on the greater military or political objectives of the operation. The commander must ensure that operational plans reflect the augmentation of lethal weapons with NLW, not their replacement, and that there should be no specified or implied first-use of NLW before lethal force can be employed. The operating environment of the 21<sup>st</sup> Century will be a complex mixture of rarely occurring conventional armed conflict, increased MOOTW, public sensitivity to the use of military power, and an explosion

of new nonlethal technology. Now is the time to prepare commanders for tomorrow's challenges by providing them with the guidance and education that will empower them to make the best net assessment of a crisis, and arrive at military courses of action that may, if appropriate, incorporate the deployment of NLW as an enabling military element of national power.

### **Recommendations**

- ◆ Joint decision making guidance for the deployment of NLW should be developed and published.
- ◆ Educate officers at all levels, from entry level to top level schools, as appropriate for their grade, on the DoD policy for NLW use and on the considerations and decisions necessary for the appropriate and most effective use of NLW.
- ◆ Incorporate into the next revision of Joint Vision 2010 a section addressing the future utility and drawbacks of NLW.
- ◆ Continue DoD and service exploration of, and experimentation with, new technology with an eye towards usage as NLW.
- ◆ Share nonlethal concepts among the services.
- ◆ Incorporate NLW deployment decision making in war game simulations and field exercises.
- ◆ Military lawyers should receive special training in their military occupational specialty training courses that prepares them to advise the commander on all matters associated with NLW and international law and treaties.
- ◆ Seniors leaders should be mindful not to unduly micromanage the development of subordinate courses of action and schemes of maneuver by directing NLW usage as a step before lethal force or simply because they are available.

## APPENDIX A

MECHANICAL		
<b>Kinetic Energy Devices</b> --Projectiles --Rubber/plastic bullets --Beanbags --Fluids --Water cannon foam --Slippery foam --Lubricants <b>Binding Devices</b> --Adhesives --Sticky foam --Entangling device	<b>Conductive Devices</b> --Particles --Whiskers --Fibers --Ribbons Obscurants --Fogs and smoke --Visual --Multispectral	<b>Mechanical Sabotage Devices</b> --Fillers --Filter clogging agent --Polymer agent --Particles --Dust --Fibrous material --Tread filler --Penetrating Devices --Caltrop --Coatings --Paint --Aerosols
ACOUSTIC	BIOLOGICAL	SUPPORTING TECH
<b>Subsonic Devices</b> --Acoustic projection weapon --Infrasound weapon <b>Sonic Devices</b> --Acoustic projection weapon --Acoustic jamming --Non-Pyrophoric flash bang <b>Ultrasonic Devices</b> --Acoustic projection weapon	<b>Organic Biocides</b> Consuming or attacking organisms --Paper-eating bacteria --Oil-eating bacteria Pathogens	<b>Delivery Vehicles</b> --Robot --RPV <b>Sensors</b> --Shock wave detection and locator --Microelectromechanical devices --Magnetometer --Radiation detection devices --LIDAR --Intrusion alert device  <b>Miscellaneous</b> --Identification technologies --Translation devices
CHEMICAL		
<b>Material Modifiers</b> --Viscosity agents --Corrosive agents --Caustic agents --Embrittling agents --Depolymerization agents --Environmental control agents --Soil Destabilizers --Cloud seeding --Combustion modifiers --Contaminating chemicals --Metallic particles --Carbon dust --Other fuels	<b>Anti-Biological Agents</b> --Gastrointestinal convulsives --IPECAC --Enematic chemicals --Neuropharmacological agents --Calmativ agents --Sedatives --Tranquilizer --Hypnotic --Neural inhibitors --Disassociative hallucinogens --LSD --Ketamine	--Irritants --CN --CS --Pepper spray --Foam --Odor producing --Persistent riot control agents --Livestock agents --Herbicides
ELECTROMAGNETIC		
<b>High-Energy Particle Beams</b> X-Ray Weapons <b>High-Energy Ultraviolet Lasers</b> <b>Visible Light Devices</b> --High-energy lasers --Anti-personnel low-energy laser --Anti-material low-energy laser --Laser stun guns --Chemical lasers <b>Light Beam Reflectors</b> <b>Radio Wave-Length Devices</b> --RF deception --High-powered RF weapon	<b>Omnidirectional Sources</b> --Optical munition --Pulsing light --Optical stun weapon --Non-pyrophoric flash bang device <b>Infrared Devices</b> --High energy laser --Anti-personnel low energy laser --Anti-material low-energy laser <b>Electromagnetic Pulse</b> --EMP mines --EMP weapons	<b>Microwave (Continuous, Pulsed, Variable Frequency, Adaptive) Devices</b> --Microwave deception --Anti-personnel weapons --Anti-material weapons <b>Direct Current Devices</b> --Tazer stun gun --Fluid stun gun --Wireless stun gun --Cattle prod --Vehicle stopper

Figure (1) Non-Lethal Weapons

Source: Margaret-Anne Coppernoll, "The Nonlethal Weapons Debate," Naval War College Review, Spring 1999, 116.

## Bibliography

- Air Land Sea Applications Center. NLW: Multiservice Procedures for the Tactical Employment of Non-lethal Weapons. Langley AFB, VA: October 1998.
- Alexander, John B. "Non-Lethal Defense III, Johns Hopkins Applied Physics Laboratory, Laurel, Maryland, February 25 & 26, 1998." Revised Agenda." Arlington, VA: National Defense Industrial Association, 26 Feb 1998.
- Alexander, Lexi and Julia L. Klare. The Role of Non-Lethal Technologies in Operations Other Than War. Alexandria, VA: Institute for Defense Analysis, June 1996.
- Bass, Harold C. "Non-Lethal Weapons and Conventional War: Facing the Commander's Issues and Dilemmas." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 13 February 1998.
- Bortz, Jason J. New Weapons Provide Alternative for Marines Dealing with Non-Combatants. Washington, DC: U.S. Marine Corps, 28 August 1998.
- Coppernoll, Margaret-Anne. "The Nonlethal Weapons Debate." Naval War College Review, Newport, RI: Spring 1999, 112-131.
- Dando, Malcolm. A New Form of Warfare; The Rise of Non-lethal Weapons. London: Brassey's LTD, 1996.
- Fenton, George P. [Director Joint Non-Lethal Weapons Directorate]. <fentongp@quantico.usmc.mil> "re: NLW Research at Naval War College." 4/26/99. Personal E-mail. (26 April 1999).
- Garland, Kyle E. "Nonlethal Weapons: Impact and Utility Concerns for Operational Commanders in Future Conflicts." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 13 February 1998.
- Hannigan, Timothy J., Lori Raff, Red Paschall and others. Mission Applications of Non-lethal Weapons. Report for OASD (So/Lic). McLean, VA: August 1996.
- Joint Non-lethal Weapons Program Directorate. "1998 A Year of Progress." Annual Report. <<http://www.usmc.mil/nlw>> Visit FTP Link. (12 April 1999).
- \_\_\_\_\_. "A Joint Concept for Non-Lethal Weapons." January 1999. <<http://www.usmc.mil/nlw>> Visit FTP Link. (12 April 1999).
- Kirkwood, David B. "Non-Lethal Weapons in Military Operations Other Than War." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 14 June 1996.



Lewer, Nick and Steven Schofield. Non-lethal Weapons: A Fatal Attraction? London: Zed Books, 1997.

Lovelace, Douglas C., Jr. and Steven Metz. Nonlethality and American Land Power: Strategic Context and Operational Concepts. Strategic Studies Institute, US Army War College, Carlisle, PA: June 15, 1998.

Lynch, Gregory R. "The Role of Non-Lethal Weapons in 'Special Wars'." Master's Thesis, Naval Post-Graduate School, Monterey, CA: March 1995.

Murphy, Dennis M. Organizing Nonlethal Attack Assets in Operational and Strategic Organizations. Strategy Research Project, US Army War College, Carlisle Barracks, PA: 7 April 97.

Naval Post-Graduate School. A Scenario Based Methodology for the Selection of Non-Lethal Weapons. Unclassified Report, NPS, Monterey, CA: 1998.

U.S. Department of Defense. Policy for Non-Lethal Weapons. DODD 3000.3. Washington, DC: Jul 9, 1996.

US Joint Chiefs of Staff. Concept for Future Joint Operations; Expanding Joint Vision 2010. Washington, DC: May 1997.

U.S. Joint Chiefs of Staff. Joint Vision 2010; America's Military Preparing for Tomorrow. Washington, DC: July 1996.

Van Williams, Terry. "Filling an Operational Requirement: The Nonlethal Approach." Unpublished Research Paper, U.S. Naval War College, Newport, RI: 13 February 98.

Walsh, Miguel D. "Non-lethal and Discriminate Weapons and Technologies." Unpublished Report, OASD/ISA. Pentagon: 14 June 1991.

The White House. A National Security Strategy for a New Century. Washington: October 1998.